



## Supporters of Nuclear Energy

# Newsletter

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### MIXED REACTIONS TO THE HINKLEY ANNOUNCEMENT

The Hinkley C project has finally been approved by the UK Government. Now the real work starts. The Sunday Telegraph's take on the decision was encouraging. "Hinkley fires up Britain's nuclear Ambitions" it said when the Government announcement was made. Other sections of the media were less enthusiastic. "Hinkley must not be taken as a precedent for other nuclear stations," the Guardian thundered, somewhat predictably.

Clearly, the first thing which needs to be tackled is the vexed question of how to improve public support for nuclear energy, largely ignored for decades and improving more recently, largely because of concerns over global warming. Hinkley's stuttering start has not improved matters and nor has the Government's decision to review the project.

Prime Minister Theresa May's obvious concerns over the deal she inherited from David Cameron and George Osborne convinced many people, including me, that she did not really believe that what was on the table was such a good deal for Britain. That has translated into more generalised suspicions about the true cost, safety and national security implications surrounding Hinkley.

It is therefore not only EDF and China General Nuclear (CGN), its partner in the Hinkley C enterprise, which must pull the public information stops out if the doubters are to be convinced that the scheme is needed, will happen and stands a good chance of being brought into operation at the currently estimated time and cost. The Government must also be seen to be wholeheartedly behind the scheme and not simply giving in to international political pressures to nod it through.

Those pressures must have been a factor in the decision though. The diplomatic fall-out from scrapping a project that was seen as extremely important by France and China, financially and in terms of prestige, would have been considerable. With the effects of Brexit still being worked out there was a very real danger of key trading partnerships being damaged.

Whatever the reason, Mrs. May has approved the scheme, giving the green light to the construction of the first new nuclear power station in the UK for a generation after a comprehensive review of the Hinkley project and a revised agreement with EDF. We should applaud that while acknowledging that EDF still has a lot to prove.

## **FOR THE RECORD**

Approval for the Hinkley project was announced on 15 September by the Secretary of State for Business, Energy and Industrial Strategy, Greg Clark, and his statement was generally regarded as a bit of a damp squib. That is unfair. The changes which the Government has made could turn out to be important, not only with regard to nuclear energy but other industries where foreign ownership might become an issue.

The Government, EDF and CGN are not wasting any time, now that the decision has been taken. On the last day of the month the final agreements enabling construction of the two EPR units at Hinkley Point C to proceed were signed by the three parties in London. The signatories were Greg Clark, EDF Chairman and Chief Executive Jean-Bernard Levy and China General Nuclear Chairman He Yu and in attendance were the French foreign minister, Jean-Marc Ayrault and National Energy Administration of China administrator Nur Bekri.

The agreements signed included the Contract for Difference (the controversial strike price deal) and the Secretary of State Investor Agreement. Mr. Clark called the signing of the strike price deal “a crucial moment in the UK’s first new nuclear power station for a generation” and it is certainly that.

For his part Mr. Levy described the contracts as the result of years of hard work on the part of the teams which had brought the project to this point. “The project is of strategic importance for EDF Group and the nuclear industry,” he said. “All of the employees of EDF Group around the world can be proud of the progress we have made. Now the next phase is under way. EDF, its partners and suppliers are ready and dedicated to the construction of Hinkley Point C.”

On the Hinkley project itself, the Government is taking powers to prevent the sale of EDF’s controlling stake prior to completion of the construction of the plant. This agreement will be confirmed in an exchange of letters between the Government and EDF. Existing legal powers and a new legal framework will mean that the Government is able to intervene in the sale of EDF’s stake after Hinkley is operational.

More importantly, perhaps, the Government will reform the wider legal framework for future foreign investment in critical parts of the UK infrastructure. These reforms will have three elements.

Firstly, after Hinkley (but not before, so it does not apply to the Hinkley project but does apply to the Moorside and Wylfa Newydd schemes) the Government will take a special share - the so-called golden share - in all future new build projects. This will ensure that significant stakes cannot be sold without the Government's knowledge or consent.

Secondly, the Office for Nuclear Regulation (ONR) will be directed to require notice from developers or operators of nuclear sites of any change of ownership or part-ownership. This will allow the Government to advise or direct the ONR to take action to protect national security as a result of a change in ownership.

And thirdly, the Government will reform its approach to the ownership and control of critical infrastructure. This will allow the Government to take "a fair and consistent" approach to the national security implications of critical infrastructure, including nuclear energy, in the future.

## **TESTING THE GOVERNMENT'S RESOLVE**

The first test of the Government's resolve may come in relation to the gas industry, rather than nuclear energy. Part of the "critical infrastructure" of the UK is the National Grid's £11bn gas distribution business. To the horror of some sections of the media China Gas has joined with Fosun, a Shanghai-based investment firm, to pitch for a majority stake in the business, alongside at least two other potential investors from overseas.

However, let us return to the effect - if any - which the Government's decision will have on nuclear energy, starting with the cost of building and operating Hinkley C. "It must be stressed," Mr. Clark said, "that the contract which has been negotiated places all the construction risk on the investors alone. Consumers will not pay a penny unless and until the plant generates electricity. "The proposed strike price of £92.50 - reducing to £89.50 if Sizewell C is built - contains important elements of insurance against any cost over-run and future high gas prices, which have historically been volatile. (Gas is, of course, the energy source against which nuclear power costs are measured - of which more later).

"The Hinkley strike price compare broadly with the costs of other clean energy, whether offshore wind, with the additional costs of intermittency, or gas with carbon capture and storage."

Hinkley C, with two 1600 MWe EPR reactors, is expected to cost £18 billion (bn) to construct (£2bn more than anticipated) and is scheduled to produce first power in 2025, two years later than expected. The Secretary of State emphasised that the Government intends to ensure that any subsequent nuclear power stations cost less than Hinkley. “As the first of a wave of new nuclear plants, we expect the experience of rebooting the nuclear industry to mean that this should reduce the cost of new nuclear power stations, of which another five are proposed,” he said.

## **YO-YO ELECTRICITY PRICES**

Hinkley is in line to receive up to £30bn in subsidies under the strike price deal. Because the average wholesale price is currently low that looks a very generous deal indeed but tucked away in the media this month there was a story which serves as a timely reminder that the wholesale price of electricity, like shares and currencies, can go up as well as down. Here is another headline for us to consider, one taken from the Daily Telegraph: “Electricity price surges to record highs as power crunch grows“ - a bit cumbersome but it makes the point.

There was also an astonishing cross-head: “£999 per MWh.” This was the price of electricity for 7pm to 8pm one evening this month as demand soared and power supplies fell away in response to a series of unfortunate and unexpected setbacks. The average price for delivery that day was a record £160 MWh compared with an average of about £40 MWh a day in recent months.

There were exceptional reasons for this, of course, but the important thing is that it showed that the wholesale price of electricity is extremely volatile. Nobody can be sure how it will average out over the 35 years of the Hinkley strike price deal.

What caused the problem for the National Grid was the unusually fine weather at the start of this month. The late summer heat led to a surge in demand for electricity to power air conditioning units, at a time when several power station plants were on planned maintenance.

At the same time there was precious little wind about and electricity from that source was in short supply, a constant concern unless and until we succeed in storing electricity from wind turbines safely and at an acceptable cost.

The problem caused by the lack of wind power was compounded by the unplanned shutdown of two of EDF’s ageing nuclear reactors - a useful reminder that the UK needs to get on with its nuclear new build programme.

To cap it all the cable bringing electricity from France to the UK also suffered an unexpected partial outage.

## **IS THE PRICE SO BAD ANYWAY?**

Vincent de Rivaz, the Chief Executive of EDF Energy, EDF's British subsidiary, insists that although the strike price appears to be high it is competitive with other low-carbon technology. Moreover, the Hinkley reactors are expected to have a life of up to 60 years whereas other low carbon technology is unlikely to manage that and in any case they produce electricity intermittently, requiring the back-up which nuclear can provide.

"When we compare the price, which is the price until 2060, to the current price it is irrelevant because today's prices are depressed. It is not sustainable," he says.

Mr. de Rivaz will take some comfort from a report from the International Atomic Energy Agency (IAEA) released this month, although it is not directly relevant to the Hinkley C strike price. The IAEA report maintains that the median cost of building new nuclear power plants is the lowest among energy technologies, including renewables such as wind and solar.

The report says that there is a significant overlap in the range of the average levelised cost of electricity (LCOE) produced by the various technologies and that despite its significant up-front costs nuclear is competitive. The LCOE is the long-term price at which the electricity produced by a power plant or wind farm will have to be sold for investors to cover their costs. The figures are based on a discounted rate of 7%, an estimate of the cost of capital for a given project.

Apart from its cost EDF has faced consistent questioning over the EPR technology destined for Hinkley as a result of problems at Flamanville in France as well as in Finland and, to a lesser extent, in China. Mr. de Rivaz is having none of it. He argues that the technology is sound, approved by the safety regulator in the UK as well as in China.

"The project in Flamanville is now fully on track and fully compliant with the reset schedule we gave a year ago," he says. "The Chinese projects, using the same design, are now built and are about to enter the commissioning phase". How on earth would EDF and its Chinese partners put £18bn at risk on a project if we were not confident in the ability to do it on time and to budget?

## **STATE SECURITY MATTERS**

Mr. de Rivaz was equally scathing about the State security concerns surrounding the Chinese involvement in the UK's nuclear energy new build

programme, known to have been shared by the Prime Minister to some extent, prompted by her joint chief of staff, Nick Timothy.

In an article written before he began working in Downing Street Mr. Timothy warned that the Chinese could use their role in the Hinkley nuclear programme to build weaknesses into computer systems which would allow them to shut down Britain's energy production at will.

"They don't need to put £6bn into Hinkley to have access to technology they already know because they are building reactors of the same design as Hinkley in China," Mr. de Rivaz said. I am not sure that I fully understand the point he was making but assume he meant that as the Chinese have a detailed knowledge of the computer systems in use with EPR reactors they could affect them remotely if they so wished.

To my mind the real answer to this sort of scare mongering is much simpler. Is the UK really so important that the Chinese would want to shut down energy systems they have part paid for when by doing so they would risk being found out and create the potential for global military action? For goodness sake, they have nuclear weapons don't they?

It would seem that the Prime Minister has been persuaded that the sort of threat identified by Mr. Timothy, apparently supported by nameless people in MI5 expressing similar concerns, is not a real and present one. The UK Government is ready to allow China to play a central role in the UK's nuclear industry after all.

### **MORE CHINESE INVOLVEMENT NOT LESS**

As soon as the Hinkley decision was taken China General Nuclear (CGN) confirmed that it intended to continue with its plan to provide a third of the capital for Hinkley, despite being somewhat miffed at the delay and uncertainty caused by the Government. The company has also been given assurances that the Government will welcome CGN taking a lead role in the construction of a new power station at Bradwell.

The word is that the State-owned Chinese company intends to formally submit plans to the regulator for its own Hualong One nuclear reactor design to be used at Bradwell very soon, possibly within weeks and certainly before the autumn is out. It seems confident that its plans for Bradwell will be approved, while recognising that the review proposed for any and every proposed power station can take years.

There are also indications that EDF and the Chinese are ready to press ahead with plans for another new power station at Sizewell, similar in size to

Hinkley with EDF taking an initial 80% stake and CGN 20%. Sizewell C, with twin EPR reactors generating is expected to cost around £18bn.

“We are now able to move forward and deliver much needed nuclear capacity at Hinkley Point, Sizewell and Bradwell with our strategic partners, EDF, and provide the UK with safe, reliable and sustainable low carbon energy,” CGN said.

“CGN and EDF have worked together in close co-operation for decades and this has laid a solid foundation for these three new nuclear projects. CGN looks forward to leveraging its 30 years experience in nuclear construction and operation and playing an important role in meeting the UK’s energy needs.”

Both Nugen, which is working on plans for a new nuclear power plant at Moorside, near the Sellafield site in Cumbria, and Horizon Nuclear Power, which is behind the Wylfa Newydd scheme, welcomed the Government’s Hinkley decision.

Tom Samson, Nugen’s Chief Executive Officer, said: “It demonstrates the viability of new nuclear investment in the UK based on the Government’s electricity market reform programme and is welcome evidence of the UK Government’s commitment to new nuclear as an essential part of the UK energy mix.”

## **AND POSSIBLY KOREA AS WELL**

Nugen is involved in talks with potential overseas investors for its £10bn Moorside project it emerged this month. Among those interested in joining the project is the State-controlled Korea Electric Power Corporation (Kepeco), according to the Financial Times. A final investment decision on the site is due in 2018.

Moorside is designed to provide up to 3.8 Gigawatts of power (compared to Hinkley’s 3.2 gigawatts) but is some years behind EDF in securing financing and regulatory approval. The three reactors planned for the site would be provided by Westinghouse, the UK subsidiary of Toshiba.

While a final investment decision is at least two years away Nugen expects extensive geotechnical and geophysical site characterisation of the Moorside site to be mostly complete by the end of this year. The data gathered will be used to inform the detailed design of foundations and ancillary structures and to determine tunnel alignments.

Equally important, the data gathered from the surveys will also be used to support licensing, planning applications and the other consents needed for the Moorside project to go ahead.

HAROLD BOLTER  
SONE SECRETARY

*Professor Wade Allison is the speaker at this year's SONE annual meeting, to be held at the Institution of Civil Engineers, Great George Street, London SW1 on Monday October 24th at 2pm. This is the theme of his talk:*

**NUCLEAR ENERGY SHOULD BE SAFE, ACCEPTABLE  
AND CHEAP : WHY THAT IS SO, WHAT HAS GONE  
WRONG AND WHAT SHOULD BE DONE**

*Wade Allison, emeritus professor of physics and Oxford and member of SONE, has spent the past ten years researching and writing two books, *Radiation and Reason* and *Nuclear is for Life*. In this talk he will explain why nuclear energy is safer than fire and always been. Unfortunately, 60 years of science-blind safety regulations, designed simply to appease the fear of nuclear weapons, have taught society a contrary view so that nuclear power plants are now over-engineered and over-priced. Young people are relatively easily reassured and initiatives to replace current international regulations have been started in the USA by an international group of professional doctors, engineers, oncologists, scientists and journalists.*

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